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13. ABSTRACT *(Maximum 200 words)*

The objectives of this study were to identify individual and collective processes that characterize both effective and ineffective planning in the Special Forces (SF) Operational Detachment Alpha (ODA) and to suggest training enhancements. During Phase I, interviews with SF experts indicated that ODA commanders and their staffs are deficient in skills and knowledges related to mission analysis and intelligence preparation of the battlefield (IPB). During Phase II, the authors reviewed archival data and observed ODA planning during a single rotation at the Joint Readiness Training Center (JRTC). ODAs that were "strong" in mission analysis (a) generated more effective implied tasks resulting from analysis and relating to other mission elements; (b) recognized a wider variety of constraints and were more likely to include constraints directly related to the threat; and (c) were more likely to revise courses of action (COAs) or method of evaluation based on the results of their evaluation. ODAs that were "weak" in IPB (a) did not analyze the effects of weather and terrain on their mission, (b) did not develop an appropriate reconnaissance and surveillance (R&S) data collection plan, (c) may produce lower quality IPB products, and (d) may determine enemy COAs less effectively.

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EDGAR M. JOHNSON
Director

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FOREWORD

The Operational Detachment Alpha (ODA) is the basic unit of the Army's Special Forces (SF). The success of these small and flexible units largely depends on the quality of the detachment's initial mission planning. This research examines ODA mission planning from a number of different perspectives: In the institution (the U.S. Army John F. Kennedy Special Warfare Center and School, USAJFKSWCS), during practical exercises, and at the Joint Readiness Training Center (JRTC). The objective of this study was to determine the factors that underlie effective and ineffective planning. The potential payoff is more effective mission planning operational performance through improved training at USAJFKSWCS. The research is part of the larger program of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) to support the development of SF personnel.

The Organization and Personnel Resources Research Unit of ARI's Manpower and Personnel Research Division conducted the research as part of the task entitled "Improving Special Forces' Personnel Development" within the advanced development program. Support for this effort is documented in a Memorandum of Agreement entitled "Establishment of an ARI Field Unit at USASOC, Fort Bragg, North Carolina" (June 1991 and Annex A, November 1993), between the U.S. Army Special Operations Command (USASOC) and ARI. The research findings were briefed in July 1994 at Fort Bragg to USAJFKSWCS (Director, Directorate of Training and Doctrine) and JRTC (Chief, Special Operations Division) personnel.

EDGAR M. JOHNSON
Director

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The authors gratefully acknowledge the support received from Irwin M. Jacobs and Benjamin Rapaport, senior analysts at Science Applications International Corporation. Their extensive experience with the Special Forces was useful throughout the project, especially in helping us understand the role of the Operational Detachment Alpha (ODA) in a larger context of U.S. national security strategy. Finally, they read earlier drafts of this report and provided many insightful comments.

We also offer our thanks to the Joint Readiness Training Center (JRTC), Special Operations Division for enabling us to observe ODA planning first hand. In particular, we would like to thank Lieutenant Colonel Daniel Brownlee, Lieutenant Colonel Mark Haselton, and Captain Kevin McDonnell. Jim Thomas of BDM Federal, Inc., was especially helpful in providing access to JRTC archival data on ODAs. We are also grateful for the direction and support we received from the JFK Special Warfare Center and School throughout this effort. In particular, we thank Colonel David Borresen, Colonel Thomas Mitchell, and Lieutenant Colonel David Wilderman for their insights as we were formulating the research.

PLANNING IN THE SPECIAL FORCES OPERATIONAL DETACHMENT ALPHA

EXECUTIVE SUMMARY

Requirement:

The objectives of the research were to identify individual and collective processes that characterize both effective and ineffective planning in the Special Forces (SF) Operational Detachment Alpha (ODA) and to suggest training enhancements.

Procedure:

The research was accomplished in two phases. During Phase I (Concept Formation), information on the problems and processes related to SF mission planning was refined and focused. The approach used was to interview SF personnel and observe SF institutional training. With the basic concepts defined, Phase II (Observations at JRTC) involved reviewing archival data from the Joint Readiness Training Center (JRTC) and viewing actual ODA planning during a single JRTC rotation.

Findings:

1. SF experts agree that ODA commanders and their staffs are deficient in skills and knowledges related to mission analysis and intelligence preparation of the battlefield (IPB).

2. Observer/Controller (O/C) observation summaries indicated that approximately half the missions were weak in mission analysis and a clear majority were weak in IPB. Further, the two sets of O/C observation summaries were independent, indicating that they measure different aspects of ODA planning.

3. Detachments that were strong in mission analysis (a) generated more effective implied tasks--that is, those resulting from analysis and relating properly to other elements of the mission; (b) recognized a wider variety of constraints and were more likely to include constraints that directly related to the threat; and (c) were more likely to revise their planned courses of action (COAs) or the evaluation method, based on the results of their evaluation.

4. Detachments that were weak in IPB (a) did not analyze the effects of weather and terrain on their mission, (b) did not develop an appropriate reconnaissance and surveillance (R&S) data collection plan, (c) may produce lower quality IPB products, and (d) may determine enemy COAs less effectively.

Utilization of Findings:

The research provided specific recommendations for institutional training at the U.S. Army John F. Kennedy Special Warfare Center and School. However, some of the suggestions could apply to unit training as well.

PLANNING IN THE SPECIAL FORCES OPERATIONAL DETACHMENT ALPHA

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PLANNING IN THE SPECIAL FORCES OPERATIONAL DETACHMENT ALPHA

Introduction

The basic organizational element of the Army's Special Forces (SF) is the Operational Detachment Alpha (ODA). In addition to the commander (a captain) and the technician (a warrant officer), the ODA consists of noncommissioned officers (NCOs) who specialize in five SF functional areas: weapons, engineer, medical, communications, and operations and intelligence. ODAs can perform the full range of SF missions, including long-term unconventional warfare (UW) and foreign internal defense (FID) missions that involve direct contact with indigenous military or paramilitary forces. They can also be tailored to execute short-term direct action (DA) and special reconnaissance (SR) missions.

Success of these small and flexible units largely depends on the quality of the detachment's initial mission planning. Observer/controllers (O/Cs) at the Joint Readiness Training Center (JRTC) indicate that many detachments do not apply fundamental concepts in SF planning (e.g., JRTC, 1993; Christie, 1994). The causes of these performance problems cannot be determined because little is known about the individual and collective processes that underlie effective or ineffective ODA planning. The goal of the present research is to identify some of those processes and to derive suggestions for improving training.

To introduce the research problem, this section summarizes the present knowledge of ODA planning from two viewpoints: (a) the military doctrinal requirements for SF planning, and (b) recent cognitive research on problem solving, decision making, human information processing, and metacognitive skills, as this research relates to ODA planning.

Doctrinal Requirements

The planning methods set forth for ODA use are consistent with the tactical decision-making process as described in FM 101-5, *Staff Organization and Operations* (Headquarters, Department of the Army, 1984) and in ST 100-9, *The Tactical Decision-making Process* (U.S. Army Command and General Staff College, 1993). However, the deliberate process described in these documents is generic. It is intended to apply to all combat arms, whereas the requirements of ODA planning present both constraints and assets that are unique to their missions and organization. The following sections identify these unique requirements and how they may affect the planning process.

Planning and Mission Analysis Tools

In recognition of the ODA's unique planning requirements, the John F. Kennedy Special Warfare Center and School (JFKSWCS) has developed a 10-step procedure to guide a detachment in its mission planning (Headquarters, Department of the Army, 1993). This procedure, summarized in Table 1, is based on the tactical decision-making

process described in FM 101-5, *Staff Organization and Operations* (Headquarters, Department of the Army, 1984) but is tailored to the unique demands of ODA planning.

Table 1

Procedures and Outcomes for the Special Forces ODA Mission Planning Process

Steps	Procedures	Outcome(s)
1. Receive Mission	Detachment members - receive briefing on the mission from their higher headquarters. - provide requests for further information as necessary.	Communication of higher commander's mission and intent.
2. Exchange Information	Detachment members study the mission. The detachment commander ensures that all detachment members understand the mission requirements and constraints.	Common understanding of mission requirements.
3. Restate Mission and Produce Planning Guidance (Mission Analysis)	The detachment conducts detailed mission analysis to - determine higher commander's intent and purpose. - identify tasks to be performed. - visualize the desired end state. - determine limits to their freedom of action. The ODA commander develops the restated mission.	ODA commander's restated mission.
4. Prepare Staff Estimates	Detachment members prepare estimates in their areas of responsibility. The ODA develops and evaluates feasible courses of action (COAs) using the following steps: • develop COAs. • analyze each COA separately through wargaming. • compare remaining COAs using selection criteria.	Staff estimates and candidate COAs.
5. Develop Detachment Commander's Estimate and Decision	Detachment members recommend selected COA, based on its advantages and disadvantages. The ODA commander - selects or modifies COA. - develops his commander's intent and concept of operation.	Commander's intent and mission concept.

(table continues)

Steps	Procedures	Outcome(s)
6. Present Mission Concept (MICON) Brief	The ODA briefs the mission concept to higher headquarters. The MICON brief describes the situation, mission statement, commander's concept of operations, general scheme of maneuver, coordination, and operational limitations.	Approved mission concept of operation.
7. Prepare Operation Plan (OPLAN)	The detachment prepares a written OPLAN.	OPLAN (minus annexes).
8. Conduct Detailed Planning	The detachment conducts the following activities: - detailed mission planning to produce required annexes and overlays to the OPLAN. - rehearsals to refine and validate the plan. - preparation of the briefback.	Annexes for OPLAN and materials for the briefback.
9. Present Mission Approval Briefing (Briefback)	The ODA presents the detailed plan to the higher commander to demonstrate that it understands its mission and is prepared to execute it. If a time for execution is given, the approved OPLAN becomes an Operation Order (OPORD).	An approved OPORD or OPLAN.
10. Prepare/ Rehearse Plan of Execution (POE)	The ODA prepares for execution and conducts final rehearsals and inspections.	ODA prepared to execute mission.

Note. Information in the table is adapted from *Detachment Mission Planning Guide* (Headquarters, Department of the Army, 1993).

It is important to note that the 10-step procedure is not intended to prescribe the only doctrinally acceptable approach to ODA planning. Nevertheless, it provides a useful model that summarizes and defines most of the procedures and outcomes of ODA planning in their likely sequence of occurrence.

As summarized in Table 1, the procedure begins with the issuance of the ODA mission from its higher headquarters. This headquarters is often a Forward Operational Base (FOB), a command and control center established and operated by an SF battalion. The next interaction with the FOB commander is at the mission concept (MICON) briefing where the ODA commander presents the concept of operations for his commander's approval. Finally, the entire plan is described in detail to the commander at the mission approval briefing (or briefback), where the FOB commander decides whether the ODA fully understands the mission and is prepared to execute it.

Overlaid on this planning procedure is the Intelligence Preparation of the Battlefield (IPB) process. According to FM 34-130, *Intelligence Preparation of the Battlefield* (U.S. Army Intelligence Center, Initial Draft 1993), the IPB is the systematic process for understanding the battlefield. Specifically, it describes the environment a friendly unit operates in, identifies the effects of the environment on the unit, and determines what the threat can accomplish within that environment. Table 2 describes the IPB procedure as four discrete steps, but in reality, IPB is a continuous process that prompts and responds to the planning process. In particular, it provides an important starting point for mission analysis, provides relevant information for developing courses of action (COAs), and supports all command decision points. In short, IPB is an integral part of the tactical decision-making process and should not be considered separate from it.

Table 2

Procedures and Outcomes of the Intelligence Preparation of the Battlefield (IPB) Process

Steps	Procedures	Outcome(s)
1. Define the Battlefield Environment.	Identify parameters in time, boundaries in space, and other characteristics that may affect mission accomplishment.	Identification of gaps in intelligence.
2. Evaluate the Battlefield's Effects upon COAs.	Explore how the environment encourages or discourages both friendly and threat COAs.	Population status overlay, military status and/or terrain overlays, weather analysis matrix, etc.
3. Evaluate the Threat.	Consult historical databases of well-known threat, or continue to develop model of less well-known threat.	Threat model, including doctrinal templates.
4. Determine the Threat COAs.	Using information from previous steps, identify what COA options are available to the enemy and predict which he is likely to use.	Situation templates, event templates, and event matrices.

Note. Information in the table is adapted from FM 34-130, *Intelligence Preparation of the Battlefield.* (U.S. Army Intelligence Center, 1993).

Recently, Fallesen (1993) summarized research that indicates the Command Estimate Process has limited applicability to many tactical situations, is too time consuming, and lacks flexibility to changing situations. However, the examples were drawn largely from battalion and higher echelon levels. ODA planning methods, in contrast, have been developed specifically for detachment operations and are generally regarded as being well-developed, time-tested procedures. While any procedure

presumably can be improved, we assume for the present research that ODA planning procedures are "givens" and regard them as assets to ODA planning.

Planning in Isolation

To minimize the probability of compromising a mission, ODA planning occurs in isolation under maximum security conditions. The Isolation Facility (ISOFAC) is established and operated by an SF company under the supervision of the director of the FOB's Operations Center. It may provide the physical and logistical support for isolating up to six ODAs simultaneously. To compartmentalize information during planning, it strictly controls communication between the ODA and FOB staff. ISOFAC staff includes area specialist teams (ASTs) that provide the interface between the ODA and higher headquarter staff. The purpose of these teams is to provide the information required to plan the ODA mission while maintaining operational security. Although a necessary security measure, the tight control of information to and from the detachment constrains mission planning.

Time Limitations

According to FM 31-20, *Doctrine for Special Forces Operations* (Headquarters, Department of the Army, 1990) the entire mission process, as described in Table 1, should be accomplished in 72 hr. In practice, some SF missions are quite complex and require more time and effort to plan. On the other hand, security or other operational considerations may dictate an even shorter period for ODA planning. Given these conditions, the FOB commander may provide more time or modify the planning process so that the ODA can complete it in the time allotted. Even under the most favorable circumstances, however, detachments have only a short period to understand a complex mission and to produce a feasible plan to accomplish it. In short, time limitations pose a serious constraint to ODA mission planning.

Team Orientation

Although the ODA commander is ultimately responsible for his detachment's planning, his staff plays a significant and indispensable role in the process. This team-oriented approach is especially appropriate given the fact that the commander may be a recent graduate of the SF Detachment Officer Qualification Course (Q-Course) with little, if any, experience in SF operations. He may need to rely on senior NCOs in his detachment, especially his operations sergeant, to provide input based on their extensive experience in SF operations. The skills and knowledges of the commander and his team complement each other. The commander provides expertise in staff and planning functions, whereas detachment members contribute subject matter expertise in SF tactics and operations.

As summarized in Table 1, the planning process calls for interaction among detachment members in nearly every step of the procedure. Although the sharing of information and knowledge can potentially increase the quality of the plan, communications problems and personality conflicts can also potentially degrade the

process. The latter problems can be minimized by employing standard operating procedures (SOPs) that define the role of each detachment member in planning. Thus, the team orientation can be both an asset and a constraint to ODA planning.

Relationship with Higher Headquarters

A key factor in ODA planning is the relationship between the detachment and its higher headquarters, usually an FOB. This headquarters provides command, control, and support functions for its ODA teams. Although a detachment plans in isolation, Table 1 indicates that the ODA has formal contact with the FOB commander and his staff at three points in the process: The initial mission briefing, the mission concept (MICON) briefing, and the briefback. In addition, communications between the ODA and FOB are maintained by the AST throughout mission planning. The quality of ODA planning depends heavily on the guidance received from the FOB commander, and the support received from the FOB staff. Thus, the relationship between the detachment and its headquarters is potentially quite complex and can facilitate or hinder ODA planning, or possibly both.

Research on Complex Cognitive Processes

ODA mission planning is a complex process that places high demands on the cognitive abilities of those involved. Developing a successful plan requires detachment members to solve problems, make decisions, and generate and test hypotheses, as well as to store and recall large amounts of information in memory. In the following sections we briefly describe a few key research areas that highlight the relationship between these cognitive skills and ODA mission planning.

Problem Solving

The processes of planning and problem solving are closely related. Perhaps the most significant difference is the dimension of time, with planning being viewed as developing problem solutions for possible future events. In their classic study of problem solving, Newell and Simon (1972) developed a model of problem solving that can be used to describe a wide variety of situations. According to this model, problem solving is the process whereby a set of existing conditions is changed into another set of conditions that satisfies a specified goal. The change is accomplished by applying problem-solving operators and may require many different moves.

Problem-solving activity takes place within a task environment, which includes the problem solver(s) and all the resources that are available to solve the problem. In the case of an ODA planning a mission, the task environment is quite extensive and includes all the resources available in the ISOFAC. It also includes resources that can be obtained through the ASTs and the FOB.

The first step in problem solving is to develop a clear understanding of the problem, including the current state, the goal state, and the methods that might transform the current state into the goal state. In mission planning, this roughly

corresponds to the analysis of the higher commander's intent. The next step is to plan a solution that, with some probability, will achieve the goal state. In mission planning, this roughly covers the period between the MICON and the briefback. The next step is to carry out the plan and then to evaluate the solution. This final evaluation stage is necessary to solidify potential gains that were achieved during the process.

Clearly, all stages of problem solving are important to developing a viable solution (i.e., plan). However, the initial stage of developing a representation of the problem is particularly important, because it lays the groundwork for all future problem-solving activities. It is difficult, if not impossible, to solve a difficult problem when the representation of the problem is faulty.

Another important feature of problems has to do with their structure. Some problems, like solving mathematical equations, are characterized as well-structured, in that there is a clearly defined goal and a fairly distinct path to achieve that goal. Other problems, like ODA mission planning, are characterized as ill-structured. For example, an SR mission might have as its primary goal collecting critical intelligence on a missile launch site. This goal might be further elaborated to include obtaining plan details (operational procedures, personnel, etc.) and also might specify the need for photographs of the site. Since it is not possible to know in advance what the ODA will encounter, it is not possible to specify precisely how those details will be operationalized (e.g., exact number of personnel, ranks, nationalities). Since the mission goals must remain flexible, the ODA must plan for a wide range of contingencies, and that takes time.

Unfortunately, time for ODA mission planning is at a premium. In addition to planning the mission, the ODA must also conduct rehearsals, briefings, and make other preparations during the available time. The lack of time and the high risk factor for many missions places the ODA in a very stressful as well as ill-structured situation.

In summary, the literature on problem solving suggests two key points in the analysis of ODA mission planning. One is to place the primary focus on the early parts of mission planning, when the ODA is developing its mission concept and evaluating COAs. The second point is to view mission planning as an ill-structured problem that cannot be precisely mapped out like a game of chess where each move has a known outcome. Rather, mission planning should be viewed as a technique for developing a general solution that will provide a flexible set of alternatives. This latter point is also addressed in the research on decision making, which is discussed next.

Decision Making

Another area of research that is related to ODA mission planning involves the processes associated with making decisions. In recent years there has been a tendency to categorize decision making into two extreme positions. One extreme is represented by decision research that has relied upon the use of formalisms such as utility theory (e.g., Edwards, 1987; Slovic, Lichtenstein, & Fischhoff, 1988). The other extreme is characterized by Klein's theory of recognition-primed decision making (Klein, 1990; Klein, Calderwood, & Clinton-Cirocco, 1988; Klein & MacGregor, 1988). The former

views decision making as a deliberate, effortful process, whereas the latter sees decision making as an unconscious, automatic process. Both these approaches describe human decision making. The critical difference is in the nature of the task.

Klein and Klinger (1991) cite ten task features that present significant challenges to classical (i.e., deliberate) decision-making methods but can be handled by naturalistic (i.e., automatic) decision making:

1. Ill-defined goals and ill-structured tasks.
2. Uncertainty, ambiguity, and missing data.
3. Shifting and competing goals.
4. Dynamic and continually changing conditions.
5. Action-feedback loops (i.e., real-time reactions to changing conditions).
6. Time stress.
7. High stakes.
8. Multiple players.
9. Established organizational goals and norms.
10. Experienced decision makers.

A review of this list of characteristics shows that most apply to the ODA mission planning environment. For the purposes of the present analysis, this suggests that the analysis of ODA mission planning should not attempt to reduce the process to mathematical descriptions, but rather focus on the characteristics of those involved in the planning process.

Human Information Processing

Highly complex cognitive tasks such as mission planning depend strongly on the information processing abilities of the individuals involved. Some of the key human information processing skills and abilities that affect mission planning include memory capacity and retrieval, reasoning ability, and hypothesis testing.

By their nature, humans have limited memory capacity, and can keep only a certain number of ideas active at any one time. Given this limitation, it is important that individuals have techniques and strategies that enable them to retrieve information from memory in an efficient and effective manner. One of the determining factors in the recall of a particular procedure is the level of experience with that procedure. Well learned procedures tend to be recalled rapidly and completely, whereas poorly learned procedures tend to be recalled slowly and incompletely. Therefore, repeated practice of key mission planning procedures (e.g., evaluating COAs) will enhance the performance of these tasks under operational conditions.

Although the recall of previously learned procedures is important, in recent years there has been a sharper focus on developing active problem solvers--those who can create solutions to novel problems under demanding performance conditions. Smith, Greeno, and Vitolo (1989) referred to this overall ability as generativity and describe two specific aspects: Flexibility and robustness. Flexibility implies the ability to perform a

procedure in a variety of different situations or settings. Robustness implies the ability to modify existing plans to meet novel constraints. In the first case, the individual is able to change the setting or select features of the setting that best match the plan. In the second case, the individual changes the plan to match the existing conditions. In either case, the individual is sensitive to the differences between the original plan and the conditions that make that plan unlikely to succeed. In addition, the individual has the ability to make changes that will accomplish the goal.

In the ODA mission planning environment, this generative ability impacts both initial planning and mission execution. During the mission planning stage, it is important that the ODA remain flexible in its planning approach, by drawing upon its collective knowledge but not becoming locked in the wholesale adoption of previous approaches. Prior plans are a valuable source of information, but every mission demands a solution that is sensitive to the mission-specific characteristics. Once a plan is adopted, the ODA must be prepared to make modifications to meet unexpected situations during execution. For this reason, the planners must possess the ability to make modifications and evaluate how those modifications affect the overall plan and each of the participants.

Metacognitive Skills

Metacognition refers to a variety of high-level self-regulatory and self-monitoring skills. Early research on metacognition focused on the development of knowledge for one's own memory processes and capacities (e.g., Brown, 1978; Flavell, 1970). The topic of metacognition has since broadened to include a variety of self-regulatory skills such as the monitoring of reading comprehension (Palincsar & Brown, 1984). Findings from this research indicate that beginning and poor readers often lack these sorts of self-monitoring skills. These sorts of findings have been interpreted as suggesting that training in metacognitive skills can improve performance of complex tasks. Similarly, one could reasonably speculate that ODA planning performance would benefit from metacognitive skills training. This training could focus on topics such as awareness of information processing limitations; monitoring of communications success; and identifying what is known (i.e., stored in memory), not known, and needs to be known.

Simply having the relevant knowledge stored in memory is not sufficient for solving a complex problem. The problem solver must understand the conditions of its application so that it is applied efficiently and appropriately. Some have suggested that knowing when stored knowledge is applicable is a trainable skill and should improve problem-solving performance (e.g., Simon, 1980). With respect to ODA planning, this metacognitive skill would be manifested as knowing when well known planning procedures are applicable and when they are not. Clearly, this skill is related to the concept of generativity discussed in the previous section.

Research Objectives and Approach

The purpose of the present research was to apply concepts from the military and research literatures to identify individual and collective processes that characterize both

effective and ineffective ODA planning. The research was also intended to provide recommendations for institutional training at the JFKSWCS.

The research was accomplished in two phases. During Phase I (Concept Formation), the problems and processes related to SF mission planning were refined and focused. The approach used in Phase I was to interview SF personnel and observe SF institutional training. Once the concepts were defined, we began Phase II (Observations at JRTC), which involved reviewing archival data and viewing actual ODA planning during a rotation at JRTC.

Phase I: Concept Formation

The objective of the first phase of the research was to characterize instruction in ODA planning skills and to identify problems in performance of those skills. The results obtained from this first phase were then used to focus data collection efforts in the second phase.

Method

To study ODA planning, we employed a variety of methods: We discussed the task with subject matter experts, observed training at JFKSWCS, and interviewed trainers.

Subject Matter Experts

Subject matter experts were consulted for background and opinions on the ODA planning process and asked to identify the important performance problems. Two different types of experts and formats were used.

In-house experts. Two project staff members, who were retired officers with extensive SF experience, presented a structured workshop on ODA planning to other staff members and other individuals doing related work. Much of the workshop was devoted to developing an understanding of the context of ODA planning, particularly the role of higher headquarters. The workshop provided the staff with hands-on experience performing planning procedures and afforded the opportunity to discuss ODA planning in some detail.

Military experts. Current military personnel assigned to the 7th SF Group (Airborne) located at Fort Bragg, NC and 5th SF Group (Airborne) at Fort Campbell, KY were also consulted. These individuals were asked to describe critical incidents of exceptionally good and poor ODA planning. We conducted a total of eight interviews with ODA commanders, detachment technicians, and operations sergeants.

Observations of the SF Officer Qualification Course

We obtained materials and observed portions of the SF Officer Q-Course at JFKSWCS that pertain to ODA planning. Instructional materials were provided from classroom training on mission planning, including the advance sheet, lesson outline, summary sheet, and supplemental materials. We then observed practical exercises at two points in the Q-Course that allowed students to apply their classroom knowledge of planning.

MOS phase. In the first phase of the Q-Course, officers learn skills common to all SF soldiers and skills related to each SF specialty (weapons, engineer, medical, communications, and operations and intelligence). During practical exercises, officers play each of the roles in the ODA. We observed three such ODAs comprising student officers.

Field phase. The field phase integrates and tests both common and specialty skills. This phase culminates in a 17-day field training exercise, commonly referred to as "Robin Sage." During Robin Sage, students in the officer training course combine with NCOs finishing training in their respective SF specialty. We observed two ODAs as they prepared for Robin Sage.

Interviews and Surveys of Trainers

We conducted interviews and/or surveys of trainers and training managers who have close contact with the planning process. These were performed at the following two sites:

JFKSWCS. We conducted open-ended interviews of three JFKSWCS training managers. The participants were asked to identify major problems in ODA planning but were also allowed to expound upon their views on ODA planning in general.

JRTC. We also surveyed O/Cs whose primary role is to observe isolations, mission planning, and mission execution at JRTC. Coaching and teaching is primarily intended to keep ODAs on track and to ensure that they receive maximum training benefit. Performance feedback is provided through two after-action reviews (AARs): an isolation AAR immediately following the mission briefback, and an execution AAR held after the assigned mission is completed.

Results and Discussion

Instruction in ODA Planning

In the Officer Q-Course, formal instruction in ODA mission planning is provided by a 6-hr block of classroom instruction. Of this time, approximately 1 hr is devoted to

introduction, conclusion, and classroom breaks, leaving 5 hr of actual instruction. As summarized in Table 3, five topics are covered during that period.

Table 3

Summary of Classroom Instruction on ODA Mission Planning

Topic	Time	References
Major events and activities that take place during the 5-day mission planning cycle	1 hr	FM 31-20 (Chapter 7)
ODA planning procedures	2 hr	FM 101-5 (Chapter 5), FM 7-20 (Chapter 2), & Detachment Mission Planning Guide
Purpose, intent, and content of the MICON	30 min	FM 31-20 (Chapter 2) & 1st Battalion's MICON Briefing Format
Purpose, intent, and content of the briefback	30 min	FM 31-20 (Chapter 7) & Detachment Mission Planning Guide
Set-up of a detachment isolation area, and duties and responsibilities of detachment staff.	1 hr	ARTEP 31-807-31-MTP & A Company SOP

Officers apply the skills and knowledges learned in the classroom during both phases of instruction. During the MOS phase the officers are organized into ODA teams to isolate, plan, and execute three short-duration Special Reconnaissance or Direct Action missions. The repeated isolations permit the officers to role play different staff jobs within a detachment. During the field phase of training, students combine with NCOs also nearing the end of their training and assume appropriate roles in the ODA. They are isolated for a full 5-day cycle to plan and prepare for a longer duration mission (e.g., unconventional warfare or foreign internal defense), and execute their planning mission against simulated guerrilla forces.

In the Robin Sage, it was observed that officers were much better prepared for isolation and planning than were the NCOs assigned as their staff. Instructors attributed the difference to the nature of training for the two groups. Apart from Robin Sage, the NCOs have little training in planning procedures and no practical experience in isolation.

In contrast, officers receive formal instruction in planning and have been isolated for three missions prior to Robin Sage.

Specific Performance Issues

Comments from our subject matter experts included a variety of qualitative comments concerning ODA planning. We paid particular attention to similar ideas expressed by several different individuals. The comments were organized under the following five topics:

Mission planning procedures. Several respondents emphasized the importance of following the specified procedures for mission planning.

1. Respondents indicated that development of COAs is a common source of difficulty in mission planning. Two specific problems were noted: (a) Alternative COAs are not distinguishable from the primary COA; and (b) detachment commanders do not know how to evaluate COAs.

2. There was no criticism that existing planning procedures are too complex or incomplete. In fact, one officer maintained that existing tools are sufficient and that no new methods for mission analysis are needed. He maintained, instead, that attention should be paid to training ODA commanders "how to think."

Contingency planning and flexibility. A separate issue within the topic of mission analysis is the importance of planning for contingencies. Several different thoughts were expressed in this regard:

1. A revealing incident was related wherein an ODA was conducting a mission in a nation where SF had little previous experience. ODA planning failed to specify actions in the case of hostile behavior of "nonbelligerents." The incident pointed out that contingency planning is especially important in unknown or little-understood cultures.

2. Consistent with the previous incident, some respondents expressed the desire that ODAs be trained to provide alternate plans. One rule-of-thumb offered was that every plan ought to have three versions: primary, alternate, and back-up.

3. Two respondents noted that detachments do not have difficulty in generating back-up plans, if required. Their problem is being able to recognize when back-up plans are needed. One respondent said that the ability to recognize problems and to adjust quickly is the essence of "flexible" planning.

4. At the same time, others suggested that the nature of contingency planning may make it more difficult to train than the other aspects of planning: Whereas most of the planning process is deliberate and doctrinal, contingency planning is tacit and

experiential. In other words, classroom instruction would have only limited effects; it is more important for soldiers to have experienced the results of failure in order to plan for contingencies. Those sorts of experiences are difficult to provide at the institution (i.e., JFKSWCS).

5. More detailed ("deeper") mission analysis can increase plan flexibility. One respondent related an incident wherein a detachment performed a highly detailed analysis of terrain and targets. While in isolation, circumstances required a significant change in the mission. However, the analysis was still relevant and allowed the detachment to adjust its plans quickly.

Intelligence preparation of the battlefield. In agreement with findings from JRTC (1993), detachments were criticized for either not understanding the IPB process or using it incorrectly.

1. A common problem is that students fail to request intelligence that is pertinent to their plan. To some extent, this fault should be shared between the detachment's intelligence NCO (S2) and the intelligence officer of the ODA's higher headquarters.

2. Even if intelligence is provided, ODAs sometimes fail to integrate it into their plan. A related criticism is that ODAs often fail to modify their plan based on new intelligence.

Conventional versus Special Forces tactics. Two respondents indicated that the differences between conventional and SF tactics had implications for ODA planning. Although the two respondents did not agree, they were persuasive and used examples to illustrate their arguments.

1. One respondent argued that conventional tactics are not appropriate to many SF situations. New officers have a conventional "mindset" that stifles their creativity in planning. He further noted that true creativity may not be rewarded in controlled exercises, such as those in the institution and maybe even those at JRTC. In other words, there may be too much reliance on the "doctrinal solution," which often does not apply to SF.

2. Another officer argued that conventional tactics are not used enough. Too often poor ODA planning is the result of vague guidance. His argument was based on the premise that conventional tactics provide more detailed planning guidance at all echelons. He pointed to the recent adoption of conventional planning procedures by SF as a positive sign of change.

Operational issues. A couple of miscellaneous operational issues related to planning were mentioned.

1. ODA planning usually includes some form of rehearsal. Too often those rehearsals are simply used for practicing the briefback. Rehearsals are needed to practice actions on the objective. These rehearsals provide not only needed practice on critical tasks, they also provide an opportunity to test the feasibility of ODA plans.

2. Commanders are trained to rely on the extensive experience of their operations sergeants. There were incidents in which the detachment commander was overly respectful of his operations sergeant's COA and did not fairly consider others. In many cases, the fallacies of plans can be revealed through a systematic and objective evaluation.

Phase II: Observations at JRTC

In Phase II, we focused on observations of unit training at JRTC. JRTC provides the facilities for SF battalion-level exercises wherein up to six ODAs can be isolated simultaneously under the control of an FOB. The personnel that participate in JRTC are experienced and assigned to their normal units. Furthermore, facilities at JRTC provide a realistic context for planning (and executing) SF missions. Personnel who have undergone training at JRTC agree that, for observing ODA planning, JRTC is the "next best thing" to actual SF operations.

For Phase II, we also narrowed the range of our investigation to give greater attention to certain aspects identified as being of special interest. Since the results from Phase I had indicated that many of the problems in planning relate to the initial mission analysis and IPB process, Phase II focused on those aspects of planning. Under JFKSWCS advisement, we also concentrated on two SF missions: (a) Special Reconnaissance (SR) missions require ODAs to obtain or verify information about enemy capabilities, intentions, or activities; and (b) Direct Action (DA) missions are short-duration, small-scale offensive actions that are targeted on specific personnel or equipment.

The observations of ODA planning at JRTC were unobtrusive. The unobtrusive approach was adopted for two reasons: (a) we wanted to capture ODA planning in a realistic setting in which we did not impose arbitrary requirements, and (b) JRTC required that we not interfere with ongoing training. The objective was to determine the relationship between observations of the planning process and evaluations of planning as provided by JRTC O/Cs.

Method

ODA Units and Missions

The observations of planning were based on 14 different ODA missions at JRTC in 1993 and 1994. Of the total 14 missions, 10 were classified as SR, 3 as DA, and 1 as a

combination of SR and DA. Ten missions were indirectly observed using the videotape archives and the comments of JRTC O/Cs. In two cases, two ODAs performed two missions each during their JRTC rotation. In other words, there were archival and videotape data on 10 missions performed by 8 different ODAs. The archival data included the detailed notes that O/Cs maintained on individual units (i.e., the "gray" books). For each mission, the researchers viewed videotapes of the MICON and the briefback.

The other four missions were directly observed by researchers during a single rotation at JRTC. Because every minute of the planning process could not be observed, we focused on four key events in which planning processes and products were explicitly discussed: (a) the initial mission briefing, (b) the MICON, (c) the briefback, and (d) the AAR of the isolation phase. In addition, the researchers tried to observe important internal planning activities, such as the development and evaluation of courses of actions. These direct observations were supplemented by O/C verbal comments provided during daily O/C meetings and written comments recorded in the gray books.

Different O/Cs were assigned to each ODA. As expected, they differed in the number and quality of comments that they recorded in the gray books. Key points in planning (e.g., the development of COAs, wargaming, and development of graphical templates) were sometimes described in great detail; other times, simply summarized or mentioned; and still other times, omitted completely. Even when researchers directly observed planning, they could not arrange to see every minute and perhaps inadvertently missed a key point. For both sets of data, then, the observations were regrettably "spotty."

Observer/Controller Observation Summaries

O/Cs organize their observations during the isolation and execution phases of a mission according to the specific tasks performed during the exercise. They summarize their observations by indicating whether each task should be regarded as a strength or a weakness of the mission. These summaries are used by the O/C to select the topics that are discussed in the AAR and to help the detachment to determine its training priorities. The observed tasks in the isolation phase were mission analysis, IPB, reconnaissance and surveillance (R&S) data collection plan, resupply plan, rehearsal, and linkup. We used the summaries for the first two tasks (mission analysis and IPB) as a starting point for our analysis to identify the characteristics of strong and weak mission planning.

It must be noted that the task observation summaries were designed to provide feedback to the ODA, not to measure or evaluate performance. O/Cs may differ in how they derive the summaries and how they use them during AARs to highlight potential problems to detachments. Furthermore, each detachment performed a unique mission with its own planning challenges. These two factors limit the reliability and validity of the observation summaries as indicators of mission planning performance. On the other

hand, the O/Cs reported on the performance of each detachment to the entire group of O/Cs and their commander on a daily basis. This provided an opportunity for O/Cs and their commander to comment on ODA performance generally and for the O/Cs to compare the performance of their assigned detachment to other detachments. As a result, these O/C meetings provided implicit normative standards for the summaries.

Results and Discussion

The objective of the data analysis was to identify observations and other factors that correlated with the observation summaries for mission planning and IPB tasks. The analyses were subject to several limiting factors. A fundamental limitation to the generalizability of our findings was that our sample comprised only a small number of cases (i.e., missions). Another limitation to statistical analysis was that not all cases were independent: Two of the twelve ODAs in the sample performed two missions. Finally, some of the reported analyses were the result of post hoc "data snooping," which increases the probability of detecting relationships in the data that are not real. Given these limitations, we decided that standard statistical tests of inference were inappropriate. In lieu of conventional techniques, our approach to data analysis involved (a) summarizing qualitative observations, (b) deriving quantitative descriptions where possible, and (c) describing some of the more notable trends in the data.

Description of the Sample

Demographic data were available on 11 of the 12 ODAs sampled in the present research. Detachment size ranged from as few as 6 to as many as 11 members. The average age ranged from 29.6 to 35.1 yr (M = 31.1, SD = 1.63). The average time that personnel had been in the detachment ranged from 0.8 to 3.6 yrs (M = 1.5, SD = 0.94). The total amount of time personnel had been in the Special Forces was recorded for only 6 of these 11 detachments, the average ranging from 2.6 to 9.0 yr (M = 4.9, SD = 2.27). Overall, these data indicated that the sample of ODAs represented a fairly wide range of demographic characteristics.

O/C and Researcher Comments

As a first step in data analysis, we documented and organized noted problems or difficulties associated with the isolation phase of mission planning for our data sample. The data consisted of O/C and researcher comments developed from the archival data. The framework that we used for organizing the data is a modified version of a scheme developed by Fallesen (1993) for organizing a recent review of research on the human dimensions of tactical planning. Using this framework as a starting point, we developed our own categories of problem areas and issues as shown in Table 4.

The Fallesen categories, modified for our purposes, proved helpful as a tool for organizing and communicating the broad range of problems and issues that can be

observed. The data themselves helped confirm our findings from the earlier concept formation phase. That is, problems that we identified in Phase I, mostly from interviews, were indeed observed in our own small sample. We also noted several consistencies between the problems and issues that we identified in our sample and those that have been identified from much larger samples and documented in recent issues of the *Joint Readiness Training Center Special Operations Training Bulletin*. The congruence with Fallesen's schema also suggests that the problems that ODAs have in planning are similar to those noted for other combat arms.

Table 4

Problems and Issues in ODA Mission Planning

Category Problem/Issue	Category Problem/Issue
Estimate Procedures Failure to Follow Procedures Lack of Understanding of the Process	Formulation of Alternatives Failure to Develop Multiple COA Failure to Develop Distinct COA Inadequate Contingencies
Management of the Process Insufficient Staff Coordination/ Involvement Failure to be Proactive Poor Sense of Priorities and Focus	Evaluation/Comparison of Alternatives Failure to Evaluate Inadequate Wargaming Poor Rating Factors/Criteria
Information Exchange Failure to Exchange Information Ineffective Attempts to Communicate	Planning and Synchronization Lack of Planning Poor or Weak Plans Failure to Rehearse
Situation Assessment (IPB) Failure to Perform IPB Poor Threat Evaluation and Integration Poor Collection Planning	

As we identified specific unit problems observable in the isolation phase, the need to consider contextual factors and circumstances quickly became apparent. The FOB, in particular, creates a context or environment in which the team performs. Just as the

mission analysis skills of the ODA commander cannot be totally separated from the contributions of the other team members, the ODA's success in mission planning is affected by the FOB with which it closely interacts. We identified four factors related to the FOB that appear to influence the ODA's mission analysis process and performance. Table 5 shows these factors with a brief explanation. In our view, any comprehensive analysis of ODA mission planning performance should at least consider these factors.

Table 5

FOB Factors That Impact ODA Mission Planning Performance

Factor *Explanation*
Amount and Quality of the Information Provided to the ODA *The amount and quality of the information supplied by the FOB staff during the mission brief varies greatly between and within FOBs.*
Degree to Which FOB is Proactive *Some FOBs are very forthcoming with plans and intelligence products. In other cases, the ODA must develop these entirely on its own.*
Degree to Which FOB is Directive *While some battalion commanders give explicit, strong direction, others offer little or no advice.*
Adherence to Doctrine by Higher Level Commander *Some battalion commanders may direct behaviors that run contrary to doctrine (e.g., directing the ODA Commander to consider only one COA or requesting the equivalent of a briefback at the MICON brief).*

Relation Between Mission Analysis and IPB Summaries

Table 6 summarizes O/C observations regarding mission analysis and IPB for the 14 observed missions. The data are notable in two regards. First, mission analysis summaries were close to a 50-50 split between weak (57%) and strong (43%) missions. In contrast, the IPB observations showed substantially more weak (71%) compared to strong (29%) missions. Second, O/C summaries on the two tasks were not apparently related: The mission analysis and IPB observations are incongruent in 6 of the 14 missions (43%). From these findings, we concluded that the mission analysis and IPB

O/C observations summarize independent aspects of the tactical decision-making process. Therefore, the two topics are discussed separately below.

Table 6

Missions Cross-Tabulated by Mission Analysis and IPB Summaries

Mission Analysis Summary	IPB Summary		Totals
	Weak	Strong	
Strong	4	2	6
Weak	6	2	8
Totals	10	4	14

Mission Analysis

Our investigation of mission analysis included the analysis and estimate procedures used by the ODA commander and his staff to produce the commander's planning guidance, to identify feasible COAs, and to recommend a single COA. The major products of this phase of the mission planning process are the commander's intent and the recommended COA. Other products include specified and implied tasks, mission essential tasks, assumptions, constraints and restrictions, restated commander's intent, candidate COAs, and decision matrices for evaluating COAs.

O/Cs identified several deficiencies in the mission analysis processes. They characterized some ODAs as following a "checklist approach" to planning that did not "integrate various aspects of the process with each other." Some ODAs avoided some aspects of planning altogether, preferring to develop their plan "on the ground." Some more specific problems in the mission planning process include the following:

- Development of implied tasks that were really subtasks or "inherent" tasks included in specified tasks.
- Developing too few COAs, or developing COAs that were not distinct.
- Failure to compare or analyze COAs.
- Inadequate development of plans for contingencies.

We examined the products of mission analysis to verify the impressions of the O/Cs, to determine characteristics of ODAs that were characterized as strong in mission planning, and to identify other potentially effective mission planning activities.

Specified tasks. Since information on specified tasks is included in the mission tasking received by the ODA, identifying these tasks is relatively straightforward. Since each ODA performs a different mission, the number and nature of specified tasks vary with the detachment. There is considerable variation in the number of specified tasks identified by the ODAs, with a range from 3 to 31 and an average of 13.1. Detachments that were weak in mission analysis identified somewhat fewer specified tasks (12.0) than those summarized as strong (14.8). Although the specified tasks listed by the ODAs were generally appropriate to the mission, some ODAs did not state specified tasks and/or seemed to ignore them in subsequent planning. In addition, the list of specified tasks often included assumptions, constraints, and evaluation criteria, inappropriately identified as tasks.

Implied tasks. Implied tasks are not specifically stated in the order, but must be accomplished to satisfy the overall mission or any of the specified tasks. Developing a list of implied tasks requires analysis. They may be derived from: The specified tasks; information about the enemy, terrain, or weather; constraints and restrictions; and other aspects of the mission or situation. The ODAs generated an average of 7.9 implied tasks, with a range from 4 to 18. There was little difference between the number of tasks generated by detachments that were weak in mission analysis (8.5) and detachments that were strong (7.0).

Examination of the content of the implied tasks revealed substantial differences in the depth of analysis used to develop them. We were able to place the implied tasks into the following five categories:

1. Reworking of specified tasks. These tasks are simply restatements of specified tasks, often with a minor addition, such as the infiltration method or the time constraint. The following implied tasks taken from the data we collected are examples from this category.

"Infiltrate undetected."
"Develop target intelligence package within 36 hr to FOB." (duplicate of a specified task)
"Conduct helo infil/exfil."

2. Inherent tasks. These tasks are not implied by the mission; they are common to all missions, or to all missions of a given type. The following tasks are from this category.

"Maintain security."
"Pack resupply bundle."
"Conduct thorough rehearsals."
"Operate all commo systems."

3. Subtasks. These tasks are really steps involved in performing specified tasks. The following tasks are from this category.

"Board aircraft."
"Conduct overland movement to NAIs [named areas of interest]."
"Develop photos."
"Meet exfil aircraft."

4. Nontasks. These implied tasks are not really tasks. The following statements are from this category.

"How long do we stay on the ground?"
"Decentralized operations."
"Remain uncompromised."

5. Effective implied tasks. These tasks involve analysis and relate properly to other elements of the mission. The following tasks are from this category.

"Avoid early detection from compound."
"Conduct stream crossing."
"Infiltrate with preconstructed firing systems and charges."

As summarized in Table 7, we were able to classify 93 of the 110 implied tasks into one of the five categories described above. Fifteen of the remaining 17 tasks were not recorded in the O/C or researcher comments, so they could not be rated. The other two were ambiguous or incomplete. Overall, 14% of the implied tasks that could be classified were categorized as effective. The ODAs that were strong in mission analysis tended to produce more effective tasks (22%) than the ODAs that were weak in mission analysis (11%). This result should be interpreted with caution, because the implied task statements were not available for two of the ODAs that were strong in mission analysis; consequently, only 27 implied tasks were listed for the "strong" group.

Mission essential tasks. Mission essential tasks are identified from the list of specified and implied tasks and include those tasks that define the success of the mission. Identification of mission essential tasks requires awareness of the commander's intent. The mission essential tasks developed by most detachments did not reflect a careful evaluation of mission requirements. The mission essential tasks were stereotyped and did not appear to depend on details of the mission. Consequently, the tasks for different missions resembled each other closely. ODAs usually had a task for infiltration, and

from one to three tasks describing actions on the ground. For example, a typical set of mission essential tasks for an SR mission would be "Conduct SR" and "Report PIR [priority intelligence requirements] to FOB." About one-third of the ODAs also listed exfiltration as a mission essential task. There were no apparent differences between detachments that were strong and weak in mission planning; both had problems developing mission essential tasks.

Table 7

Implied Tasks by Type and O/C Observation Summary for Mission Analysis

Mission Analysis Summary	Type of Implied Task						
	Restated Specified Tasks	Inherent Tasks	Subtasks	Nontasks	Effective Tasks	Not Rated	Total No. of Rated Tasks
Strong	3 (11%)	14 (52%)	3 (11%)	1 (4%)	6 (22%)	15	27
Weak	10 (15%)	39 (59%)	6 (9%)	4 (6%)	7 (11%)	2	66
Totals	13 (14%)	53 (57%)	9 (10%)	5 (5%)	13 (14%)	17	93

Assumptions. Only six of the ODAs listed assumptions. Although we found some assumptions that appeared to assume the success of some part of the mission (e.g., "ODA can infil" or "No compromise"), most of the assumptions seemed appropriate. Examples of appropriate assumptions were: "Camera coverage is adequate"; "Enemy already in valley"; "No fire support...available"; "C2 vehicle will remain static long enough for intelligence gathering." Few differences between strong and weak detachments were uncovered from the small sample of assumptions.

Constraints and restrictions. Constraints and restrictions can come from a variety of sources and require different amounts of work to uncover. The *Detachment Mission Planning Guide* (Headquarters, Department of the Army, 1993) stresses the importance of understanding how the mission is affected by the command, the environment, and the threat. The most easily identified constraints come from higher command, that is, from the mission statement or the FOB's mission briefing. These constraints include such elements as time limits on infiltration and exfiltration, methods of infiltration or exfiltration, and reporting requirements. Constraints based on the threat or the environment (e.g., terrain or weather) are somewhat more difficult for the detachment to

determine, because they require integration of IPB process results with mission planning. In addition to these three categories of constraint, some ODAs derived constraints from their own weaknesses, especially if the detachment was not at full strength.

Of the 88 constraints that could be categorized, 64 (73%) reflected restrictions by higher command, and an additional 9 (10%) reflected the condition of the detachment (see Table 8). The ODAs that were strong in mission analysis also produced constraints that were based on the threat--five constraints (14%)--whereas none of the weak ODAs produced constraints of this type. Finally, both strong and weak ODAs considered the environment to some extent; 10 (11%) of the constraints were based on considerations of terrain or weather.

Table 8

Constraints by Type and O/C Observation Summary for Mission Analysis

Mission Analysis Summary	Type of Constraint				Not Rated
	Command	Environment	Threat	ODA Weaknesses	
Strong	22 (61%)	5 (14%)	5 (14%)	4 (11%)	1
Weak	42 (81%)	5 (10%)	0 (0%)	5 (10%)	0
Totals	64 (73%)	10 (11%)	5 (6%)	9 (10%)	1

Detachments that were strong in mission analysis tended to produce more different kinds of constraints. Four out of the five "strong" ODAs (80%) included constraints from three of the four categories described above; the remaining detachment used only one category. On the other hand, two out of seven "weak" ODAs (29%) included constraints of three types; the remaining five considered only a single category. These numbers and percentages exclude the ODAs that listed no constraints, because the absence of a statement of constraints may merely reflect the fact that these ODAs did not brief them in the MICON, so they were not available in the videos from which we obtained our data.

Commander's intent. The detachment's statement of the commander's intent summarizes the results of mission analysis into a succinct description of the purpose of

the mission, the method by which it will be accomplished, and the commander's vision of the end state. One O/C whom we interviewed indicated that the ODA's understanding of the commander's intent was one of the primary features that distinguish strong from weak mission analysis and planning. While our data do not allow us to evaluate how well the commander's intent was understood by the detachment, we can evaluate the intent statements themselves to assess whether they contain sufficient information to communicate the purpose, method, and envisioned end state.

Statements of the commander's intent were available for 12 missions. Of these, four ODA commanders (33%) included only the method in their intent statement, and another two (17%) included only the purpose. Only two commanders (17%) produced intent statements that included all three elements. Of the three types of information supposed to be included, the end state, describing the commander's vision and mission success criteria, was the most frequently left out; only four commanders (33%) included a description of the envisioned end state in their intent. The ODAs that were strong in mission analysis and planning had essentially the same record as those that were weak.

COAs generated. With regard to development of COAs, doctrine specifies that (a) several COAs should be developed, (b) they should be distinct, and (c) they should be feasible. All ODAs developed at least two COAs to analyze, and all but two developed three COAs. (Information was not available on the number developed by one detachment.) We had sufficient detail to determine how much the COAs differed for only eight of the ODAs. Examination of these COAs indicated that they differed in two or more respects for five ODAs; for example, the COAs might involve both different infiltration methods and different actions on the objective. Contrasts between detachments that were rated strong in mission analysis versus detachments that were weak in this planning task showed no differences in terms of the number or types of COAs that they developed. We did not have information sufficient to determine the feasibility of the COAs that were developed. O/C comments indicate that at least one detachment did develop an infeasible COA, but that it quickly dropped it from consideration.

Of course, the ODAs that produced the most detailed definition of the COAs are probably those that followed a procedure most consistent with doctrine. O/C comments indicated that several either developed too few COAs or developed COAs that were not distinct. Others did not develop COAs at all, intending to develop them "on the ground."

Evaluation of COAs. The evaluation factors must distinguish good from bad COAs. Nothing is gained from using an evaluation factor on which COAs do not differ. At best, all would receive the same rating, wasting planning time with no effect. At worst, they would be ranked arbitrarily, and trivial differences between the them would have a major impact on the choice of one of them. The evaluation factors must also be defined precisely, so that ratings are accurate and reliable. The most common evaluation factors used by the detachments were stealth (also termed security or risk),

command and control, simplicity, time (or speed), flexibility, and ability to meet mission requirements. There were no discernible trends for certain factors to be used by ODAs that were strong in mission analysis.

The specific methods used by the ODAs varied in some details, primarily regarding the rating scale for evaluation factors. The type of rating scale used was known for only five ODAs. Two used a relative scale in which the best alternative for each evaluation factor received a "+" on that factor, the worst received a "-," and the intermediate received a "0." Use of a relative scale maximally distinguishes the alternatives, because it produces best and worst alternatives on each evaluation factor, even when the differences among alternatives are small. However, this method can overemphasize factors on which there are small differences among the COAs, especially if the factors are weighted equally. At least one O/C at JRTC expressed a preference for a relative scoring procedure, because it focuses the evaluation effort on differences among COAs.

Three other ODAs used an absolute scale with between three and five points. An absolute scale allows the score to reflect the size of the differences between COAs. For example, two COAs that have nearly the same value with regard to an evaluation factor can be given the same score on that factor. Thus, a small difference between COAs will not have too large an effect on the overall evaluation. However, as one O/C indicated, the use of an absolute scale for evaluation can shift the focus away from differences among the COAs. This tendency was noticed in one detachment that used a four-point, absolute rating scale. This ODA tried to increase the sensitivity of the scale by using pluses and minuses in addition to the scale values. Ultimately, however, it found the rating method unsatisfactory and abandoned the evaluation.

Revision of COAs. Obtaining inconclusive results from a decision matrix was a common result--more common, in fact, than arriving at a single solution. In this situation, it is necessary to either modify the analysis (probably the weights) or change the COAs. Although our data are very limited in this respect, we did observe that two ODAs that were strong in mission analysis revised their analysis or COAs in light of the analysis results. This action, which requires more than rote application of planning procedures, appears to be a characteristic of the effective mission planners.

Intelligence Preparation of the Battlefield

Compared to mission planning, fewer of the ODA missions (only 4 of 14) were strong with respect to the IPB process. Consequently, the results are better for identifying poor examples of IPB than for identifying good ones. In general, the findings are consistent with earlier reports by JRTC (1993) that noted SF training operations had been "...based on poor analysis, faulty expectations of the enemy's capabilities and intentions, and unfocused collection priorities" (p. 1).

To provide more specific results, O/C and researcher comments were reviewed to identify those that relate to IPB. To preclude reporting idiosyncratic comments, we decided to report only those comments that were made for at least 4 of the 14 missions. The resulting comments and observations pertained to IPB products, assimilation of threat information, analysis of weather and terrain effects, refinement of priority intelligence and information requirements (PIR and IR), development of R&S data collection plans, and determination of enemy COAs. We examined the relationship between those comments and the overall summary of O/C observations regarding IPB. Unfortunately, no information could be derived from more than half of the missions sampled for every category of comment.

The data indicate that the analyses of terrain and weather effects were related to O/C observation summaries of IPB. We could determine whether or not weather was considered for six of the detachments. Both of the groups that were strong in IPB analyzed weather effects, while none of the groups that were weak did so. Detachments that were weak in IPB also failed to analyze terrain effects (data on strong groups were not available). This finding suggests that these analyses are fundamental processes in the IPB. Another trend was that failure to provide an R&S data collection plan was characteristic of weak detachments. Again, this suggests that R&S planning is an essential component of the IPB, especially for the SR missions in the present sample.

As noted in Table 2, the IPB results in several products--in particular, certain graphic overlays. We found that comments regarding the IPB products pertained only to the detachments that were weak on IPB. Perhaps the strong teams produced appropriate IPB products, requiring no further comment. Surprisingly, three "weak" detachments did, in fact, provide IPB products. It should be noted, however, that in two of the three cases, the products were criticized as either "not complete" or "too late" in the planning process. Thus, the quality of IPB products may be more important than the simple fact that they were produced.

Several expected relationships were not borne out by the data. No differences were noted between detachments that were strong and weak in IPB in terms of whether ODAs assimilated threat information, refined priority intelligence requirements and information requirements (PIR/IR), or determined enemy COAs. Specifically, none of the five detachments for which data were available assimilated threat information. For the other two factors, data were available for only a single strong ODA, and weak ODAs were evenly split regarding whether they provided the information. One explanation for the lack of a relationship in the first two instances (assimilate threat information and refine PIR/IR) is that both processes are dependent on guidance and input from the FOB. In other words, the FOB may have required weak ODAs to perform the process correctly or impede the process in strong ODAs.

This interpretation is less applicable to the last process (determine effects of enemy COAs). This is a fundamental process that any ODA would perform for

contingency planning. As in IPB products, however, the fact that this process occurs may be less important than the quality of the process. O/Cs criticized the approach used to determine enemy COAs in the two instances from ODAs that were weak in IPB. In one case, the detachment commander performed this process in isolation from the rest of his staff, the most notable missing input being the detachment S2 (intelligence). In the other case, wargaming enemy COAs was characterized as an "afterthought" and was not performed properly or thoroughly.

General Discussion

Our discussion addresses two purposes: The first is to summarize our findings regarding ODA mission planning; the second is to derive implications from the findings for instruction on planning at the institution.

Summary of Results

The two phases of research generated a wide variety of findings, which may be summarized as follows:

1. SF experts agree that ODA commanders and their staffs are deficient in skills and knowledges related to mission analysis and IPB. These problems were evident from our observations at JRTC. Similar comments documented by JRTC (1993) suggest that these problems are not unique to the ODAs we observed. Nor are the problems in ODA planning unlike those experienced across combat arms and organizational echelons (Fallesen, 1993).

2. Most of the observations at JRTC were related to planning tasks: Mission analysis and IPB. O/C observation summaries indicated that approximately half the missions were weak in mission analysis, whereas a clear majority were weak in IPB. Furthermore, the two sets of O/C observation summaries were independent, indicating that they measure different aspects of ODA planning.

3. Detachments that were strong in mission analysis (a) generated more effective implied tasks--that is, those resulting from analysis and relating properly to other elements of the mission; (b) recognized a wider variety of constraints and restrictions and were more likely to include constraints that directly related to the threat; and (c) were more likely to revise their COAs or evaluation methods, based on the results of their evaluation.

4. Detachments that were weak in IPB (a) did not analyze the effects of weather and terrain on their mission, (b) did not develop an appropriate R&S data collection plan, (c) may produce lower quality IPB products, and (d) may determine enemy COAs less effectively.

Training Implications

The results clearly indicate that ODAs have difficulty planning missions. One approach to improving performance is to lessen task demands by either changing the procedures or introducing a new job aid. During Phase I, our SF subject matter experts warned us against this approach by arguing that existing procedures are sound and that extant documents (e.g., *Detachment Mission Planning Guide* and relevant field manuals) provide sufficient job aids. Furthermore, modifying procedures or introducing new job aids could introduce new concepts that may prove counterproductive to planning. Because planning is a collective activity, it benefits from the development of "shared cognitions" (Levine, Resnick, & Higgins, 1993), which potentially promote the understanding of roles and facilitate communication both within and without the ODA. Shared cognitions, in turn, are based on a common set of terms and frame of reference that SF personnel share. Thus, the introduction of new procedures could be disruptive to the process of planning.

An alternative approach to improving planning performance is to enhance the training process. We derived several improved approaches to training by examining the performance problems identified in our research and by inferring cognitive tasks or processes that pertain to the problems. Table 9 summarizes the linkage between the performance problems, the inferred cognitive processes that underlie the problems, and the specific training recommendations that we derived. This table is organized by Fallesen's (1993) categories of problems and issues in mission planning. The improved approaches to training, which are described below, are specifically intended for institutional training at JFKSWCS, although they could also be implemented in unit training.

Table 9

Training Recommendations Derived From Performance Problems and Inferred Cognitive Processes

Category Problem	Cognitive Tasks/Processes	Training Recommendations
Estimate Procedures	Problem Solving	Train conditions of applicability and nonapplicability.
inflexible application of analysis and planning procedures	Productive Thinking	Train development of alternative approaches to problem.

(table continues)

Category Problem	Cognitive Tasks/Processes	Training Recommendations
Management of Process insufficient staff coordination and involvement failure to be proactive poor sense of priorities	Problem Identification Metacognitive Processes	Train methods and techniques of team decision making. Train leaders how to monitor and evaluate process. Train time management skills.
Information Exchange poor intrateam communication	Shared Mental Models	Train development and communication of the content of mental models, including assumptions.
Situation Assessment failure to consider factors failure to use prior experience effectively.	Problem Recognition Problem Representation	Train cognitive skills with multiple trials on wide range of problems, providing detailed feedback.
Formulation and Evaluation of Alternatives failure to evaluate data failure to track concepts through planning	Problem Representation Problem Solving Decision Making Memory	Train developing COAs. Develop tools/training procedures to enhance retention of information.

Training Content

Following an examination of current instruction in planning, we provide the following suggestions for augmenting the content of training:

1. Increase instruction of NCOs in planning. Our observations of the Robin Sage exercise at JFKSWCS indicated that the student officers were much better prepared in isolation tasks than were their NCO counterparts. O/Cs concurred, noting that officers had already isolated, planned, and executed three training missions before Robin Sage, whereas the NCOs had no such practical experiences. Also, the experienced NCOs whom we interviewed in Phase I indicated that most of what they know about planning was acquired through job experience. These findings suggest that NCOs would benefit from increased instruction and practice in planning at JFKSWCS.

2. Incorporate ST 100-9 in training. According to the O/C comments, the doctrinal reference used most often at JRTC was ST 100-9, *The Tactical Decisionmaking Process* (U.S. Army Command and General Staff College, 1993). This manual presents extensive procedural (i.e., "how-to") information on mission analysis, COA development and evaluation, and the IPB process. Interestingly, this manual is not cited as a reference for the course on planning at JFKSWCS (see Table 3). There are some obvious reasons that this text is not included: It is designed for instruction in division- and corps-level operations, and the level of detail is beyond that which can be covered in a single block of instruction at JFKSWCS. Nevertheless, to succeed at JRTC, ODAs must know some of the more fundamental techniques described in this manual. Parts of the manual could be used to elaborate on the procedures referenced in the 10-step ODA planning process (Headquarters, Department of the Army, 1993).

3. Include training in agenda setting/monitoring. The ODA commander serves as the executive of the planning process. Although activities of the detachment members are somewhat independent, the commander needs to organize and integrate information. A key skill required of the commander is that he be able to manage the detachment's planning time well. Other relevant skills include problem identification, recognition of similar situations, problem partitioning, process selection, solution monitoring, and sensitivity to feedback. In the actual mission planning the ODA commander might choose to delegate some of this responsibility, but the bottom line is that he is responsible for the team's performance and must know where the team is going and how well they are meeting their goals. Although the detachment commander many not need to know every detail of each COA, he does need to know the general outcomes of each analysis and be able to evaluate those outcomes.

4. Provide ample practice and feedback on problem recognition/representation. Successful problem solving is predicated on accurate characterization of the problem. ODAs must be able to clearly define their problem and understand the real constraints they face, what impact those constraints have on their planning, and what methods they have to circumvent those constraints. Generating a list of constraints is only the first step of the process. The more difficult process is understanding how those constraints shape the approach to accomplish the mission. ODA commanders need to be prepared to develop clearcut problem representations through careful analysis of the current information as well as drawing upon the collective ODA experience with similar missions. Repeated practice trials should be structured such that students learn to evaluate the conditions of applicability/nonapplicability and are given a chance to develop alternative approaches when appropriate.

5. Provide practice on COA development and evaluation. Training should include practice situations to allow the student to develop and evaluate COAs. Students should practice and receive feedback on developing multiple distinct COAs for a given situation. They should also be trained on some of the more obvious problems in developing and using rating scales to evaluate COAs. They should then practice

evaluating COAs in realistic situations, in which team members advocate their favorite COAs.

6. Provide training on team decision making and communication. The team context of planning should receive special emphasis. The interrelationship of team communication and decision making has been discussed by Levine et al. (1993). These researchers identify two approaches to instruction that should improve such group processes: (a) structured instruction on specific techniques; and (b) promotion of learning through apprenticeship. The former approach is similar in concept to direct training of specific self-monitoring (metacognitive) skills, such as question asking and listening skills. The latter emphasizes instruction of novice performers by more experienced group members in the context of realistic team performance. The two approaches are not mutually exclusive and might be incorporated into a single integrated approach to team training.

General Training Methods

To provide an environment for effective training, training methods must be designed with the following needs in mind: (a) the need to provide sufficient practice on mission analysis and planning activities, (b) the need to provide timely and meaningful feedback on performance, and (c) the need to provide a logical and progressive sequence of instruction. Because it is usually impossible to satisfy all needs to their fullest extent, developing training requires compromises on training goals, so that some needs are satisfied to a greater or lesser extent than others. We offer the following suggestions regarding these needs.

1. Design training exercises that give a larger proportion of the trainees direct, hands-on experience in mission analysis and planning activities. Practice in mission analysis and planning is provided in the commanders' qualification course by the exercises conducted at Fort Bragg and Robin Sage. The extent to which each prospective commander can practice his role in mission analysis is limited by the fact that most of the students are playing the roles of members of the ODA other than the commander. A student playing the role of the weapons specialist will get little experience in determining specified or implied tasks, or in formulating the commander's intent and guidance. Special attention should be paid to giving all trainees direct experience with the roles for which they are being trained.

It should be recognized that while role playing does not give all students hands-on experience with the tasks that an ODA commander performs in mission analysis and planning, it does help the students understand the roles of other ODA members. The common understanding of mission planning provided by cross-training may improve unit performance. However, it does not replace the commander's knowledge of the requirements of his own job.

2. Provide frequent feedback during the planning process. Timely and meaningful feedback enables practice to produce improvements in performance. Opportunities for feedback are limited when an ODA plans in isolation. The primary feedback consists of the MICON brief, the briefback, and the exercise AAR. Additional feedback may occur during execution of the mission (if it is part of the exercise), but this feedback is delayed and ambiguous. That is, there are many potential causes of problems that occur during mission execution. Consequently, it is difficult for the trainee to know what he could have done in the planning process, if anything, to prevent the problems that occurred during execution.

3. Sequence training so that it builds logically on the skills and knowledges possessed by the trainee. The U. S. Army has described the requirements for sequencing in the phrase, "crawl-walk-run." The phrase describes a process that proceeds from simple training of unitary skills and individual activities to integrated training of complex missions in situations that incorporate some of the stress of actual battle (for further discussion, see Morrison & Holding, 1990). Training in mission analysis and planning begins with classroom lectures and practical exercises to give the prospective ODA commander some familiarity with the overall process, and its major steps, as well as with Army planning doctrine. Later, the trainees participate in isolation exercises.

Additional training is needed for an intermediate level between these two extremes. This training would occur in the context of realistic SF missions, but would focus on specific elements of the mission planning processes, such as those in which deficiencies were found at JRTC. Adding this training component would provide for a fuller sequence of training experiences at the crawl, walk, and run levels.

Specific Training Methods

Positive features of current training include the facts that it provides a progression from simple classroom training on single tasks to exercises requiring simultaneous training on several tasks, and that it provides a concomitant progression in realism. The results of our analysis of JRTC data indicate that greater emphasis on mission analysis and IPB would be beneficial. We recommend providing this training using practical exercises that are intermediate in scope and complexity between the types of training that are currently offered. This training would use methods of part-task training and simulation, as described in the following recommendations.

1. Employ part-task training methods to provide a bridge between initial classroom training and isolation exercises. Part-task training is designed to isolate and train separable components of the planning process. The main challenges in designing part-task training strategies are identifying components that can be trained independently, and developing procedures to integrate the components after they have been trained. Research on part-task training (see Knerr et al., 1986 for a review) has identified several methods for developing and conducting part-task training. One

method that seems particularly appropriate for mission planning is termed forward chaining. Forward chaining would begin by training the first steps in the process, that is, the early steps in mission analysis. When these steps were learned, later steps in the process would be gradually added, until eventually the trainees would be performing the entire mission-planning process. The advantage of this approach is that the trainees receive more immediate feedback on their performance in early phases of the process, and can correct mistakes before they have an impact on later phases.

It may be possible to identify specific topics that would benefit for training outside of the context of the entire mission. However, because the elements of mission planning are tightly integrated, it is unlikely that there will be many of these topics. Candidates for this form of part-task training should be those for which detachment commanders typically make errors, and that are relatively independent of other mission-planning processes. There would be a benefit to training in an environment in which trainees worked individually or in small groups (perhaps representing the ODA commander, the team sergeant, and the S-2), to reduce the requirement for role playing.

2. Incorporate simulation, where appropriate. Simulation is already applied effectively in the training exercises that are part of the commander's qualification course. However, elements of simulation can be applied to increase the impact of the part-task training. For example, it might be possible to simulate the activities of other team members, so that students could get more practice performing the commander's role. Simulation could also be used to help students learn to recognize situations that require change in plans.

3. Follow part-task training with dual-task or multiple-task training. After individual mission analysis activities are learned, they should be combined to require the commander to plan while performing related tasks. Dual-task training was identified as a useful training method by Means, Salas, Crandall, and Jacobs (1993) for tasks with heavy workload, high stakes, or high stress. Training exercises as they are currently conducted, even if they involve only the isolation phase, provide a realistic requirement for performing multiple tasks. Dual-task training may be productively used at earlier phases of training, as well.

4. Adjust the realism of training based on the level of training. Following the preceding three recommendations will provide a progression of training activities that increase in realism. The high fidelity of the later training exercises will maximize transfer.

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